THE AMENDMENTS

IN THE CLAIMS

A marked-up version of the claims showing the amendments is attached hereto as Exhibit A. Matter that has been deleted from the claims is indicated by brackets and matter that has been added is indicated by underlining.

Please cancel Claims 28-49, without prejudice.

Please amend Claim 15 as follows:

15. (Once Amended) A system capable of identifying one or more ion channels of a cell, which elements are affected by a test substance, comprising a device and accompanying software,

in which said device comprises:

(a) a solid state microelectrode;

(b) a cell culture comprising one or more electrically active cells having a cell membrane including one or more ion channels, which one or more cells are capable of providing a measurable action potential that exhibits one or more perceptible characteristics; and

(c) an intervening layer which (i) comprises a surface modifying agent, and (ii) is positioned between said microelectrode and the one or more cells of said cell culture, such that a high impedance seal is provided at least in the vicinity of said one or more cells of said cell culture, said intervening layer further comprising cell anchorage molecules;

and in which said accompanying software comprises instructions that can be implemented by a computer and which are capable of relating changes in the one or more characteristics exhibited by said action potential to one or more ion channels of said one or more cells upon exposure of said one or more cells to a test substance.

17. (Once Amended) A system capable of identifying one or more ion channels of a cell, which elements are affected by a test substance, comprising a device and accompanying software,

in which said device comprises:

(a) a solid state microelectrode;

(b) a cell culture comprising one or more electrically active cells having a cell membrane including one or more ion channels, which one or more cells are capable of providing a measurable action potential that exhibits one or more perceptible characteristics; and

(c) an intervening layer which (i) comprises a surface modifying agent, and (ii) is positioned between said microelectrode and the one or more cells of said cell culture, such that a high impedance seal is provided at least in the vicinity of said one or more cells of said cell culture, said intervening layer further comprising a high viscosity mixture comprising alcohols, ethers, esters, ketones, amides, glycols, amino acids, saccharides, carboxymethylsaccharides, carboxyethylsaccharides, aminosaccharides, acylaminosaccharides, polymers thereof, or combinations thereof;

and in which said accompanying software comprises instructions that can be implemented by a computer and which are capable of relating changes in the one or more

characteristics exhibited by said action potential to one or more ion channels of said one or more cells upon exposure of said one or more cells to a test substance.

20. (Once Amended) A system capable of identifying one or more ion channels of a cell, which elements are affected by a test substance, comprising a device and accompanying software,

in which said device comprises:

(a) a solid state microelectrode;

(b) a cell culture coated with a polymer comprising one or more electrically active cells having a cell membrane including one or more ion channels, which one or more cells are capable of providing a measurable action potential that exhibits one or more perceptible characteristics; and

(c) an intervening layer which (i) comprises a surface modifying agent, and (ii) is positioned between said microelectrode and the one or more cells of said cell culture, such that a high impedance seal is provided at least in the vicinity of said one or more cells of said cell culture;

and in which said accompanying software comprises instructions that can be implemented by a computer and which are capable of relating changes in the one or more characteristics exhibited by said action potential to one or more ion channels of said one or more cells upon exposure of said one or more cells to a test substance.

22. (Twice Amended) The system of claim 1 in which the intervening layer comprises a layer that is attractive to cell adherence.